

EMBEDDED SYSTEM

USB3 Vision Processing Unit



- COM Express based embedded PC
- Intel i7 processor
- 4 x USB 3.0 inputs for USB3 Vision™ cameras.
- 2 x dual 3G-SDI outputs

FEATURES

- Custom COM Express based embedded PC.
- Intel i7 processor – variants and other options available.
- 4 x USB 3.0 inputs designed for “USB3 Vision”.
- 2 x dual 3G-SDI outputs.
- 1 x RS-232.
- 2 x USB 3.0 system ports.
- 2 x internal SSD drive slots (M.2 SATA).
- Development Ports: 2 x USB2, 1 x GigE, 1 x DisplayPort.
- Watchdog facility.
- PCIe/104 expansion slot.
- Linux or Windows 7 Embedded operating system.
- High reliability, long product life.



OVERVIEW

The **Vision Processing Unit (VPU)** is designed to acquire image data from up to four USB3 Vision cameras, process the image stream in real-time and then output the image data using the 3G-SDI output channels.

The VPU is designed for industrial and medical use, typically embedded into an OEM machine.

Internally the unit is comprised of three circuit boards –

- (a) COM Express processor module.
- (b) Carrier Card (main PCB onto which the processor module and PCIe/104 modules fit.)
- (c) PCIe/104 expansion card which provides the interfaces for USB3 Vision cameras. A dedicated USB power supply set at 5.1V allows for long cables.

This modular architecture allows for a wide variety of processors available from various COM Express vendors and similarly using the PCIe/104 format, other interface cards may be used.

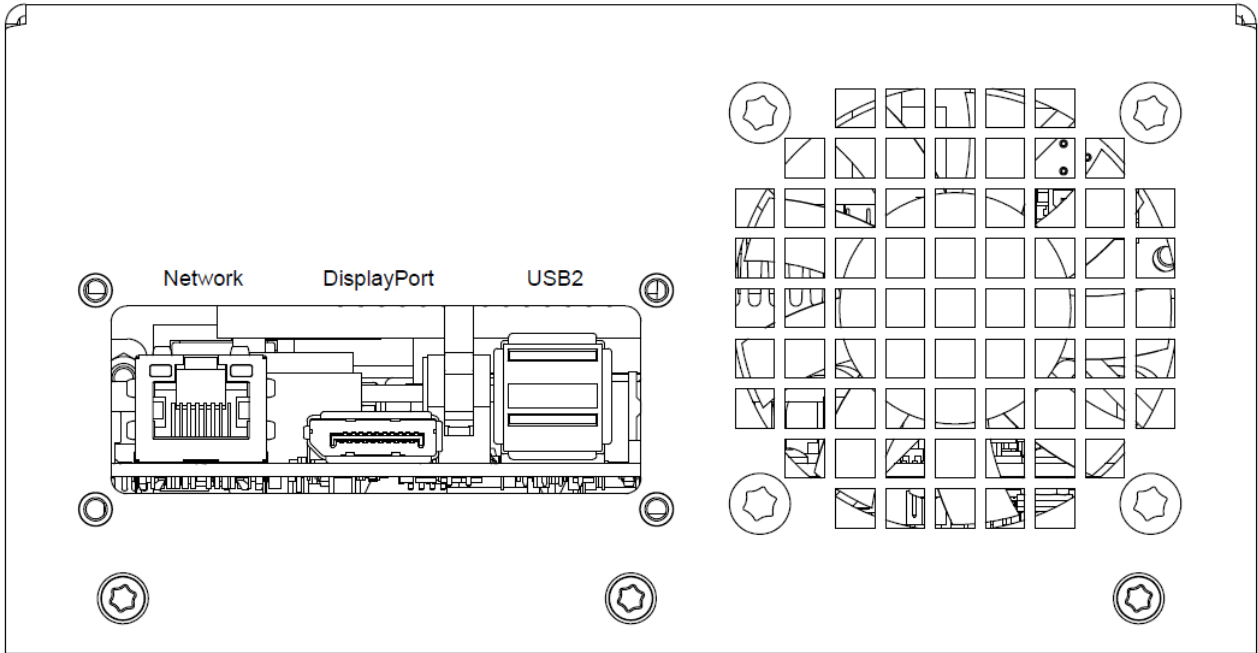
SPECIFICATION SUMMARY

<i>Processor:</i>	COM Express Type 6 module utilizing an Intel i7-4700EQ processor. Other processor options available on request.
<i>Memory:</i>	2 x 8GB DDR3 1600.
<i>Hard Drive:</i>	1 x 120GByte SSD.
<i>USB3 (for cameras):</i>	4 x USB 3.0 ports designed to support USB3 Vision cameras via PCIe/104 expansion card. (Active Silicon part number: AS-FBD-4XUSB3-5-104-2PE2) A dedicated power supply for USB VBUS provides each USB 3.0 port with a nominal 5.1V at 900mA. To cope with very long cables, this voltage can be increased as a hardware option.
<i>USB3 (general purpose):</i>	2 x USB 3.0.
<i>3G-SDI outputs:</i>	4 x 3G-SDI outputs using BNCs connectors arranged as two pairs such that each pair has the same data on each output.
<i>RS-232</i>	1 x RS-232 port.
<i>Reset Connector:</i>	3-pin connector for standard PC reset/reboot and power down.
<i>LEDs:</i>	5 x 3mm bi-color green/red LEDs for user status feedback.
<i>Development Port:</i>	1 x GigE network, 1 x DisplayPort and 2 x USB2. (Under panel marked "Factory Use Only".)
<i>Earthing Point:</i>	M4 threaded blind hole, 7mm minimum thread depth.
<i>Expansion Options:</i>	PCIe/104 format expansion slot pre-fitted with 4-port USB 3.0 Host Controller.

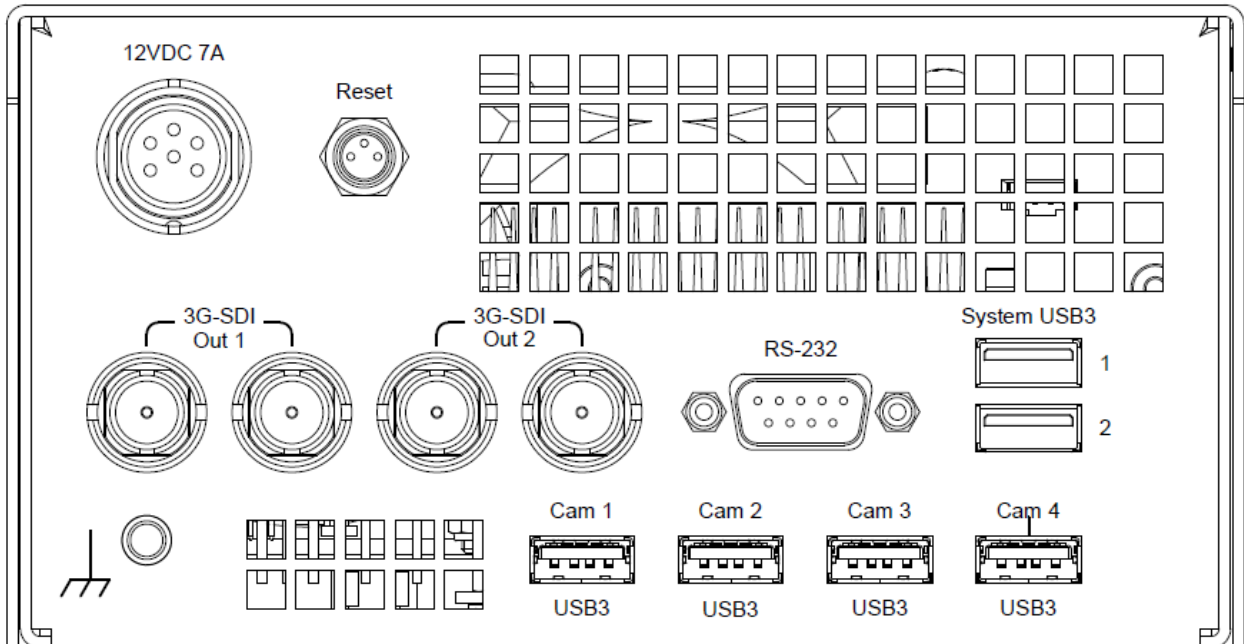
CONFORMANCE

<i>COM Express</i>	COM Express Type 6 compliant processor module.
<i>CE</i>	CE marked and compliant with the relevant EU directives as listed below.
<i>RoHS</i>	Conforms to RoHS2, the European Union's Restriction on Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment Directive 2011/65/EU.
<i>EMC</i>	Compliant with EN 55022:2010 (class A) and EN 55024:2010 in accordance with EU Directive 2004/108/EC Electromagnetic Compatibility.
<i>REACH</i>	Compliant with the requirements of REACH (Registration, Evaluation, Authorization and Restriction of Chemicals, EC 1907/2006), the European Union's chemical substances regulatory framework for Substances of Very High Concern.
<i>UL</i>	All printed circuit boards used in this product are manufactured by UL recognised manufacturers and have a flammability rating of 94-V0.
<i>FCC</i>	Compliant with FCC Rules for Class A digital devices.

Front View



Rear View



PHYSICAL AND ENVIRONMENTAL DETAILS

<i>Dimensions:</i>	160mm wide by 220mm deep by 83mm high.
<i>Weight:</i>	1506g
<i>Power Supply</i>	12V +/- 5%. Requires monotonically rising voltage on power up as per ATX specification.
<i>Power Consumption:</i> <i>(VPU only)</i>	100% CPU load @ 12V, typical 60W. 50% CPU load @ 12V, typical 50W. 0% CPU load @ 12V, typical 18W. (All figures excluding any attached peripherals.)
<i>Power Consumption:</i> <i>(VPU plus 3x active USB cables and cameras in typical application environment)</i>	100% CPU load @ 12V, typical 60W. 3x Active Cables: typical 3W, 3x Cameras: typical 9W. Total: typical 72W.
<i>Storage Temperature:</i>	-40°C to +70°C.
<i>Operating Temperature:</i>	Recommended: 0°C to +40°C (ambient environment). Absolute Maximum: +50°C (ambient environment), at which CPU “throttling back” may occur depending on CPU load.
<i>Relative Humidity:</i>	10% to 95% non-condensing (operating and storage).
<i>Pressure:</i>	500 mbar to 1060 mbar (operating and storage).

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
AS-LM01-CME-SYS-B	USB3 Vision Processing Unit (VPU).



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